

What is claimed is:

1. An electric actuator comprising:

a main body unit;

5 a rotary driving source which is connected substantially in parallel to an axis of said main body unit and which is driven and rotated in accordance with an electric signal;

10 a gear mechanism which transmits rotary driving force of said rotary driving source; and

a feed screw mechanism which converts rotary motion transmitted by said gear mechanism into rectilinear motion and which includes a feed screw shaft provided movably back and forth from said main body unit to outside,

15 said feed screw mechanism including a feed screw nut which is externally fitted to said feed screw shaft to be meshed with said gear mechanism and which is integrally formed with a gear section having a plurality of teeth circumferentially.

20 2. The electric actuator according to claim 1, wherein said main body unit includes a tube member and a pair of cover members which are connected to both ends of said tube member, and a piston, which is slidably
25 displaceable along an inner wall surface of said tube member, is connected to an end of said feed screw shaft.

3. The electric actuator according to claim 2,
wherein said main body unit is provided with a cushion
mechanism which absorbs shock exerted on said piston when
said piston arrives at an end of displacement.

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4. The electric actuator according to claim 3,
wherein said cushion mechanism is provided with cushion
chambers which are compressed by said piston, and said
cushion mechanism has cushion valves which adjust flow
rates of air discharged from said cushion chambers to
outside.

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5. The electric actuator according to claim 2,
wherein said piston is supported between a pair of collar
members, holes are formed in said pair of cover members,
and said collar members are capable of entering holes.

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6. The electric actuator according to claim 5,
wherein cushion packings are installed to said holes for
sealing function by surrounding outer circumferential
surfaces of said collar members.

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7. The electric actuator according to claim 1,
wherein said gear mechanism includes a first gear and a
second gear, said first gear is coaxially connected to a
rotary driving shaft of said rotary driving source disposed
in parallel to an axis of said feed screw shaft, said

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second gear is provided between said first gear and said feed screw shaft, teeth of said second gear is meshed with teeth of said first gear, and said gear section of said feed screw nut meshes with said teeth of said second gear.

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8. The electric actuator according to claim 1, wherein a first bearing and a second bearing are arranged at one end and the other end of said feed screw nut, respectively, for rotatably supporting said feed screw nut.

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9. The electric actuator according to claim 1, wherein said gear section is provided on a circumferential surface of an annular projection which is integrally formed at a central portion of an outer circumferential surface of said feed screw nut.

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10. The electric actuator according to claim 2, wherein said piston has a polygonal cross-sectional shape, and said piston slides along said inner wall surface of said tube member having a shape corresponding to said cross-sectional shape of said piston, thereby preventing said piston from rotation.

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